Protein found to direct embryonic stem cells as they mature

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Researchers at the Stanford University School of Medicine have found that clusters of embryonic stem cells in a lab dish share some unexpected similarities with actual embryos. These clumps, called embryoid bodies, consist of hundreds of cells, many of which begin to form more mature cell types. For example, they often contain groups of primitive heart muscle cells that beat visibly. In this work the researchers found that the embryoid bodies also contain a line of cells that resemble an embryonic structure called the primitive streak. This streak is the first indication that the embryo has a top and bottom or back and front. Blocking molecules found in the embryoid body primitive streak pushed those cells to form a group of cells that make up skin and nerves. Enhancing those molecules pushed the cells to form cell types like muscle and intestine. This work could help researchers learn how to push embryonic stem cells to form particular cell types, which is a necessary step in developing stem cell-based therapies.

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Related Information: Press release, Stanford Stem Cell Biology and Regenerative Medicine Institute, Nusse lab page

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